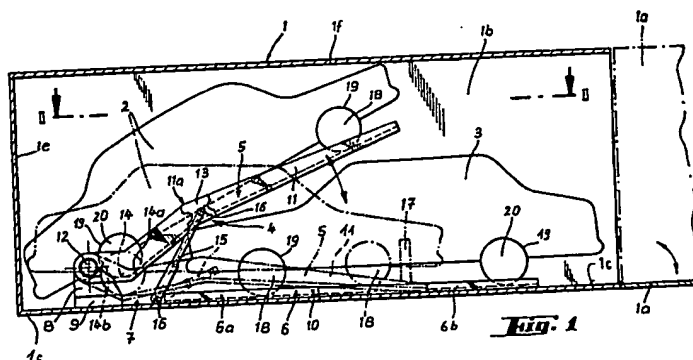


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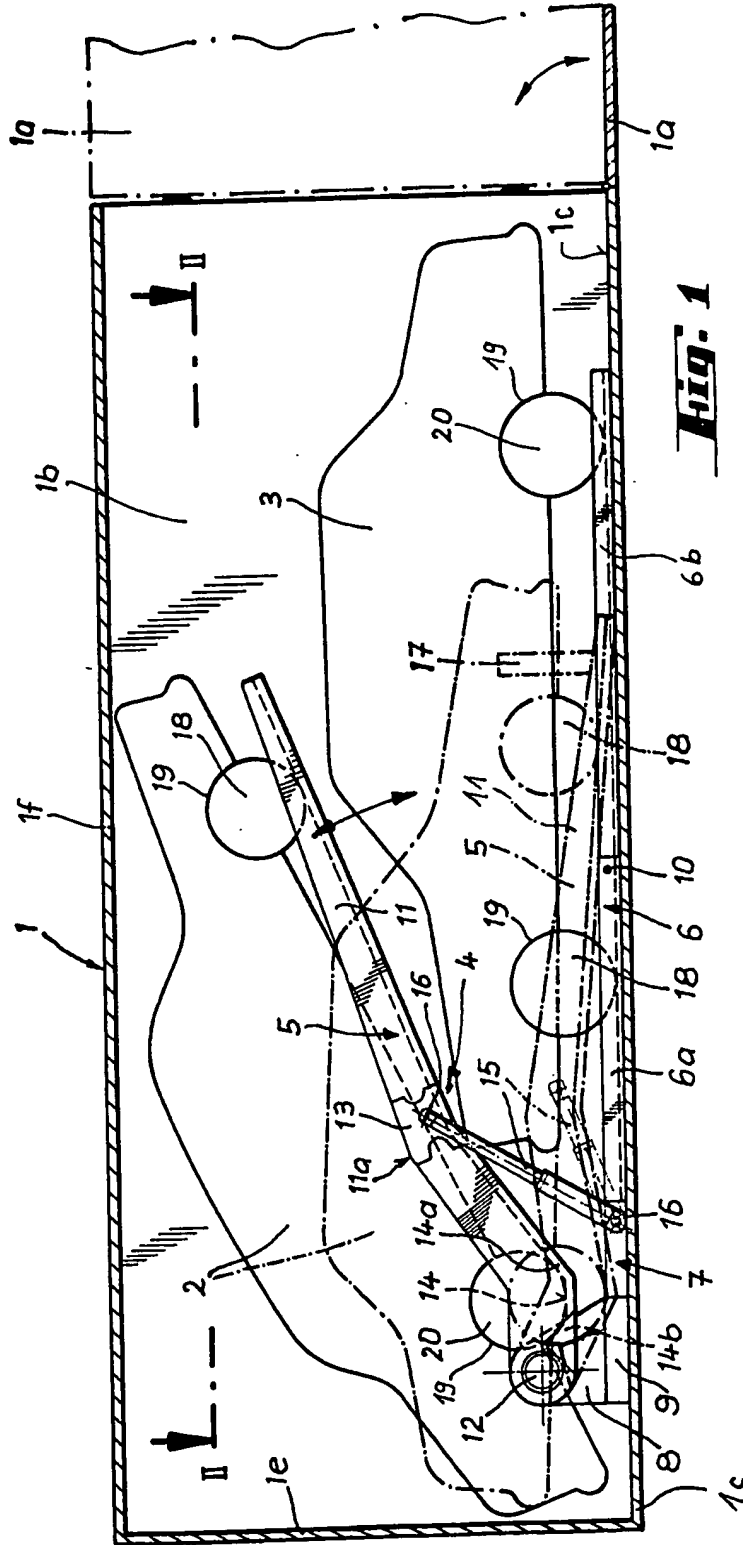
(54) Transportable containers

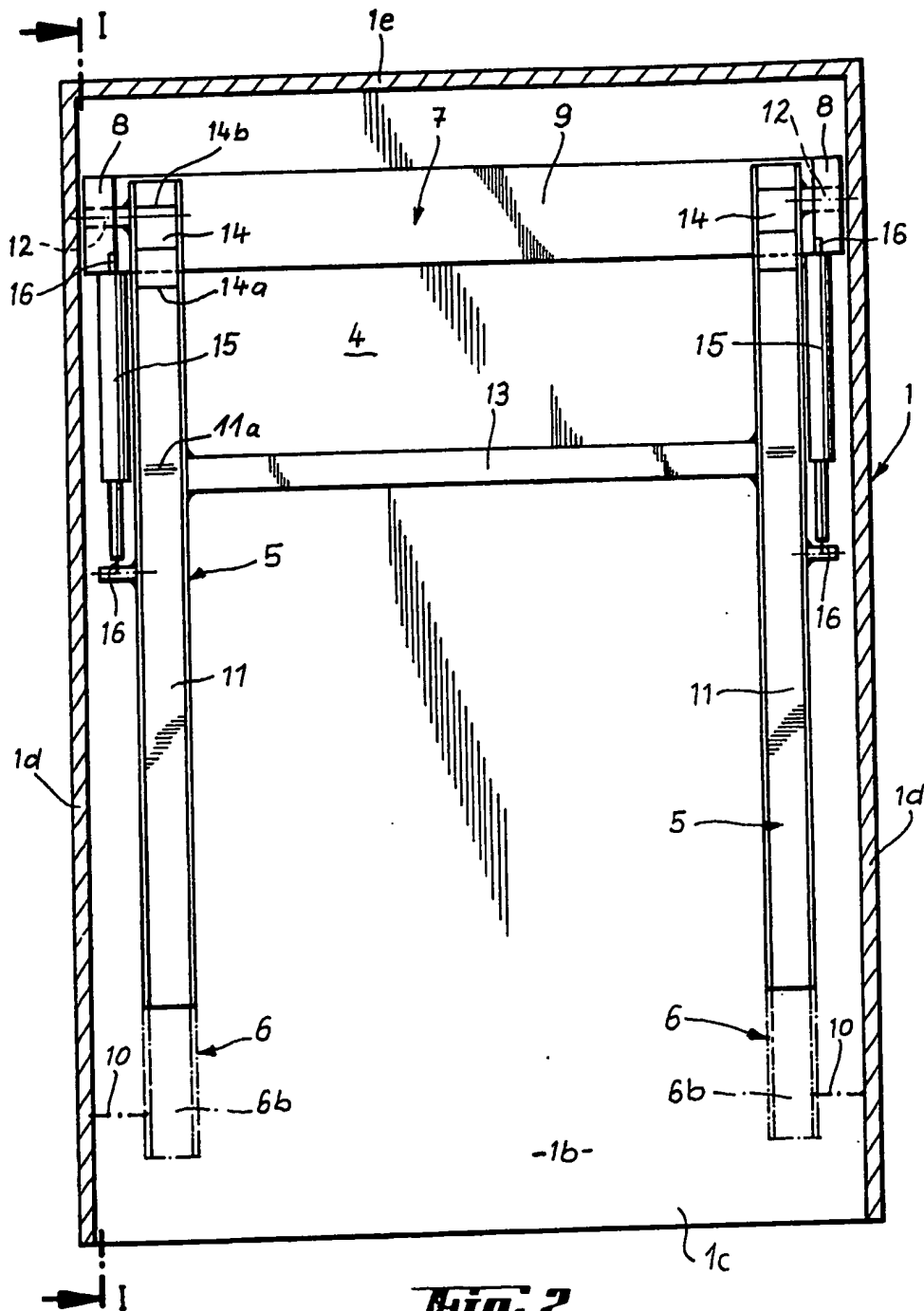
(57) A container 1 for transporting cars 2, 3 contains a detachable loading and holding device 4 which has a pair of arms 5 which can be swivelled about shaft 12 by hydraulic cylinders 15, a rack and pinion or a lever rod and carries a first car 2 in an inclined position. A pair of guides 6 rests on the base 1c of the container and carries a second car 3 disposed on a horizontal plane and located partly under the first car 2. Each arm 5 comprises a U-shaped rail section 11, each of which includes a trough 14 to accommodate a wheel 20. The double guide 6 includes a part 6b which is pushed into a part 6a when not in use, at which time several devices 4 can be stacked within one container 1 and supported by bearing section 7 and member 17.



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**Fig. 2**

## SPECIFICATION

**Transportable container for transporting private motor-cars**

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This invention relates to a transportable container which is closed on all sides and has a door or gate at one end for the loading and transporting of private motor-cars.

10 Up till now the transportation of motor-cars over land and sea has required a large standing area for the motor-cars, since the latter, arranged nose to tail and/or side by side on goods trains and ships, always require the full vehicle area plus a safety clearance, resulting in spatially expensive and consequently uneconomical transportation.

The object of the invention is therefore to provide space-saving and economical transportation of motor-cars by means of containers, the containers 20 being equipped with simple facilities for the space-utilizing and stable accommodation of the motor-cars. After the transportation of the motor-cars, these simple facilities are easily removable from the containers and can be space-savily accommodated for the return journey in a proportion of the 25 transported containers, so that the rest of the containers will be free for other goods during the return journey.

The object is met according to the invention by means of the features quoted in combination in 30 appended claim 1, the features quoted in the appended sub-claims representing advantageous developments of the combination of claim 1.

The advantages achieved by means of the invention are as follows:-

1) Into a container there is removably installed a loading and holding device with which two private motor-cars can be loaded in the container, with their positions fixed and with optimum utilisation of 40 space.

2) By accommodating two motor-cars in a container, a saving in space is immediately achieved compared to the traditional mode of transportation, and furthermore the containers can be stacked, thus 45 achieving a further saving in space.

3) The motor-cars are accommodated in the containers protected against external influences such as weather and damage.

4) The loading and holding device is simply and 50 inexpensively constructed, exhibits a safe mode of operation and is easy to fix in the container as well as to remove it again from the latter.

5) After transportation, the devices removed from the containers can be stacked space-savily 55 one on top of the other in one or more containers, and transported back.

6) The other containers not required for transporting back the devices and these are the majority, are free to accommodate other goods on the return 60 journey, so that that an extremely economical transportation there and back is achieved.

An embodiment in accordance with the invention is hereinafter described in detail with reference to the accompanying drawings.

65 In the drawings:-

*Figure 1* is a side view of a partial section of a container with a loading and holding device for two private motor-cars installed in it;

*Figure 2* is a plan view of a partial section of the same container with a loading and holding device.

70 1 designates a transportable container, closed on all sides, which at one end has a door (double door) or gate. The container 1 has a rectangular spatial shape and is used for loading and transporting two 75 motor-cars 2, 3. For this purpose there is detachably installed in the container interior 1B a loading and holding device 4, like a platform, by means of which the two motor-cars 2, 3 introduced into the container 1 stand in the container 1 with their positions 80 secured.

The loading and holding device 4 has a double arm (swivelling arm) 5 which swivels vertically and carries one of the motor-cars 2, locked in position in an oblique attitude, and a double accommodating 85 guide (floor guide) 6 which rests on the container bottom and carries the second motor-car 3, locked in position and standing partly under the oblique motor-car 2.

The swivelling double arm 5 and the double guide 90 6, which can be fixed in one place, are mounted on a common bearing section 7 and consequently form a structural unit.

This bearing section 7 consists of two upright pedestals 8 and a cross-piece 9 which connects the 95 pedestals 8 and keeps them spaced apart. Moreover, the bearing section 7 has a width which corresponds to the internal width of the container 1, so that this bearing section 7 lies in the interior 1B with only slight lateral play (clearance from the container's side walls 1D) and is consequently fixed in a position 100 in a lateral direction within the interior 1B. The two lateral pedestals 8 are adjacent to the container's side walls 1D and lie close to the latter with a small clearance.

105 Furthermore, the bearing section 7 is arranged at a specific distance from the end wall 1E opposite the door or gate in the interior 1B of the container. The fixing in position of the loading and holding device 4 in the container interior 1B is thus undertaken on the 110 one hand by means of the bearing section 7 which extends over one longitudinal end area of the device 4, and on the other hand by means of lateral fixing means 10 in the form of bolt, rest and plug fittings, etc., which collaborate with container-side lashing 115 points and are arranged near the free longitudinal end area of the double guides 6, this position-fixing equipment being detachable, so that the complete loading and holding device 4 can be removed from the container 1.

120 The double swivelling arm 5 is formed in a preferred manner from two rail sections 11, U-shaped in cross-section with the U-opening pointing upwards, which run parallel to each other and are arranged with the longitudinal direction of the rails 125 in the longitudinal direction of the container. The distance between the rail sections 11 corresponds to the track width of the wheels 18, 20 of the motor-car 2, so that the two rail sections with their U-path 11 provide the drive-up and carrying surface for the 130 motor-car wheels, and the two U-side pieces form a

lateral guide path for the wheels, by means of which the motor-car 2 is securely guided in the lateral direction. The length of the two rail sections 11 has been made greater than the distance between the 5 front and rear wheels 18, 20 of the motor-car 2. Both rail sections 11 are journaled so that they can swivel vertically at one longitudinal end about horizontal shafts 12 at the bearing section 7, a horizontal shaft 12 being attached, preferably by welding, at right 10 angles to the longitudinal direction of the rail, to each rail section 11 on its U-side piece facing the container's side wall 1D, each arm 11 being held with this shaft in a bearing pedestal 8 so that it can swivel. Both rail sections 11 are located between the two 15 bearing pedestals and close to their associated bearing pedestal 8.

In a preferred mode, the two rail sections 11 are connected by means of a cross-piece 13 which runs transversely at a specific distance from the swivelling shaft 12. This distance must be sufficiently large 20 for the transverse cross-piece 13 not to impinge on the region of the second motor-car 3. For example this cross-piece 13 can fit between the rail sections 11 in the middle longitudinal area or towards the free 25 longitudinal end.

Furthermore, the two rail sections 11 are angled upwards Z-wise in the longitudinal direction for the optimum utilization of space in the container 1 and to permit the motor-car 3 to be driven as far 30 under the obliquely standing motor-car 2 as possible, and the cross-piece 13 can also be mounted in this bent region 11A.

To lock the motor-car 2 to the rail sections 11 in its oblique attitude, each rail section 11 is fitted with a 35 trough 14, near the swivelling shaft 12, which can be formed by deforming the rail section U-path or by walls fitted therein and preferably welded in. As the embodiment shows in Figure 1, the trough is restricted in the longitudinal direction of the rail 40 section 11, specifically the obtuse angles U-path area pointing upwards at 14A, and a roof-like section 14B close to the swivelling shaft 12 which is welded to the rail section 11.

A wheel 20 of the motor-car 2 is inserted into this 45 trough 14 of each rail section 11, so that by this means the vehicle 2 is secured against movement in the longitudinal direction.

For the vertical swivelling of the double arm 5 there is provided at least one moving device, 50 preferably a pressure medium cylinder, which is journaled at one end with its cylinder casing on the cross-piece 9 so that it can swivel, and at the other end can swivel and act with its piston rod on the cross-piece 13. This pressure medium cylinder 15 55 can be mounted in the central transverse area of the device 4. It is preferable however to provide a pressure medium cylinder 15, on each side area of the device 4, which extends between rail section 11 and container side wall 1D and is journaled in the link positions 16 at the cross-piece 9 as well as the 60 rail section 11.

The pressure medium cylinders 15 consist preferably of hydraulic cylinders, it then being possible to fit each pressure medium cylinder 15 with a plug 65 connection for connecting to an hydraulic system or

the hydraulic equipment of a motor vehicle, or with its own hydraulic pump which is manually operated.

Furthermore, instead of the pressure medium cylinders 15, mechanically or manually rotatable 70 threaded spindles, racks which can be moved by means of a drive and pinion, or a mechanically operated lever rod can be used as a moving device.

For the position-secured accommodation of the second motor-car 3 there are provided two guides 6, 75 which correspond to the track width, are mutually parallel spaced and point in the longitudinal direction of the container and are made up of two rail sections 6A which are U-shaped in cross-section with the U opening uppermost and which are 80 attached to the cross-piece 9 by one longitudinal end. From both of these rail sections 6A, a further track rail 6B, which is U-shaped in cross-section with the U opening uppermost, can in each case be pulled out, so that by this means the two U-rails 6A, 6B in 85 the pulled out position will provide the length needed for the second motor-car 3. The second vehicle 3 stands in the horizontal plane with its wheels 18, 20 in the rails, and is secured in the lateral direction by means of the U-side pieces and held fast 90 against rolling by means of the applied hand-brake. Due to the track rails 6B which can be pulled out, the rigid guide-rails 6A only have a length which approximates to the length of the rail sections, so that as a result the device 4 is compactly designed in length.

A support 17, which is connected to the guide-rails 6A by hinge or plug, can be fixed in each case to the free ends of the two guide-rails 6B which can be pulled out. By means of these two supports 17, it is possible to stack several devices 4 for their transportation, since the swivelling double arm 5 is swivelled 100 down, and a second and in each case a further device 4 is placed on a lower one. For this the support 17 has a height which corresponds to the height of the bearing pedestals 8, so that the devices 105 4 can be stacked one upon the other on an even plane. Each device 4 rests with its bearing section 7 on the bearing section 7 below, and the lateral guide-rails 6 rest on the supports 17. In doing so it is expedient to make holes in the paths of the guide-rails 6A, into which each support 17 can engage with 110 a drop-pin for mutual locking.

The loading and fixing in position of two motor-cars in the container takes place as follows:-

To be able to utilise the existing height of the 115 container 1 favourably, it is expedient to remove at least the two front wheels 18 of the two motor-cars 2, 3, which can be done by the manufacturers, and then to attach carrier rings 19 to the bolts of the wheel suspension, which can subsequently be scrapped, 120 since they are cheaply produced stampings and can thus be discarded.

It is possible to drive the motor-cars 2, 3 with these carrier rings 19. The removed wheels 18 are stowed in the boot of the motor-car 2, 3.

To load the first motor-car 2, the double arm 5 is swivelled down into the position in Figure 1 indicated by chain-dotted line. The motor-car 2 is driven backwards into the container 1, receiving its track guidance by means of the pulled out guide-rails 6A, 130 6B and the arm rail section 11. The motor-car 2,

driving in backwards, comes onto the arm rail section 11 with its rear wheels 20 and front carrier rings 19, the rear wheels 20 of the vehicle 2 entering the mould 14, which limits the driving in and secures the motor-car 2 in the lateral and longitudinal directions.

The double arm 5 is now swivelled upwards by means of the pressure medium cylinder(s) 15 and the shaft 12, so that vehicle 2 comes to rest in the oblique position, with its rear part down in the corner region between container bottom 10 and end wall 1E and with its front part under the container roof 1F, i.e. pointing obliquely upwards and opposite to the direction of entry, but with its front part pointing in the direction of driving out. Now there is a convenient space under the double arm 5 from the bent region 11A as far as the door, into which the second motor-car 3 can drive with its front part. The second vehicle 3 is driven forwards into the container 1, being guided on the guide-rails 6. If the second vehicle 3 has been driven fully into the container 1, it will stand with its wheels 18, 20 on the guide-rails 6 and with part of its roof under the raised double arm 5. Since on the second vehicle 3 too at least the front wheels 18 have been removed and replaced by carrier rings 19, the front part is smaller in height than originally with the front wheels 18, since the carrier rings 19 have a similar diameter. For this reason, firstly the favourable vertical swivelling of the first vehicle 2 is achieved, and secondly the relatively deep entry depth of the second vehicle 3 under the arm 5 is made possible.

There is also the option of removing all four wheels from both vehicles 2, 3 and replacing them by carrier rings 19, so that this means both vehicles 2, 3 will be reduced in height. In the drawing according to Figure 1, all four wheels 18, 20 have been removed from both vehicles 18, 20 and stowed in the boot.

For unloading, the motor-car 3 is first driven out, and then the double arm 5 with the second vehicle 2 is lowered, this being possible by the manual opening a valve where pressure medium cylinders 15 are employed. After the arm 5 has been lowered, the second vehicle 2 can also be driven out of the container.

For the return transportation of several devices 4 according to the invention, the former are removed from the containers and, in doing so, the track rails 6B are pushed into the guide-rails 6A, and two supports 17 are fixed to the guide-rails 6A, so that the several devices 4, lying in a horizontal plane, can then be stacked on top of each other and accommodated in a common container for transporting back.

With the height design of the device 4 according to the invention, 8 devices 4 can be transported in a standard container, stacked one on top of the other.

The cross-piece 13 in the front region of the device makes possible easy transportation of the complete device 4 by means of a fork-lift stacker.

Within the scope of the invention as defined in the appended claims, it is also possible to employ a base plate with moulded track grooves instead of the two guide-rails 6 for guiding the motor-car 3.

The loading and holding device 4 according to the

invention can also be employed as independent equipment in garages and building spaces, for accommodating motor-cars and also for storing or servicing other objects, e.g. containers, tanks and crates, and can moreover easily be temporarily fixed in position in these spaces.

## CLAIMS

1. A transportable container of the kind which is closed on all sides and has a door or gate at one end, for transporting motor-cars, comprising a loading and holding device for two motor-cars constructed as a platform is detachably installed in the interior of the container, the device having a double arm which can be swivelled vertically by shifting means and carries a first motor-car securely positioned in an oblique attitude, and a double guide which rests on the base of the container and carries a second motor-car on an even plane and located partly under the obliquely lying first motor-car.

2. A container, according to claim 1, wherein the swivelling double arm and the double guide and the shifting means form with a common bearing section a transportable structural unit.

3. A container, according to either of claims 1 and 2, wherein the swivelling double arm is journalled so that it can swivel vertically about an horizontal shaft running at right angles to the longitudinal direction of the motor-car and attached to the bearing section.

A container, according to any one of claims 1 to 3, wherein the swivelling double arm consists of two rail sections, having a U-shaped cross-section with the U opening pointing upwards, whose U-paths form a support surface and whose U-side pieces form lateral guide paths for the wheels of the first motor-car.

5. A container, according to any one of claims 1 to 4, wherein each rail section of the swivelling double arm has close to the swivelling shaft a trough for accommodating a wheel for fixing the position of the first motor-car in the longitudinal direction.

6. A container, according to claim 5, wherein the trough consists of a graduated wall area and a roof-like run-up section welded into the rail sections.

7. A container, according to claim 4, wherein each rail section of the swivelling double arm is angled upwards Z-wise at a distance from a bearing shaft forming room for the second motor-car to enter underneath, and consequently an angled region forms one trough bounding surface.

8. A container, according to claim 4, wherein the bearing section has two lateral bearing pedestals which are connected together by a transverse cross-piece and are adjacent to the container side walls for the lateral fixing of the device, and wherein into each bearing pedestal there is set a swivelling shaft attached to the double arm rail section, both rail sections thus being arranged between the bearing pedestals running parallel to one another.

9. A container, according to any one of the preceding claims, wherein the shifting means is at least one pressure medium cylinder, a mechanically or manually rotatable threaded spindle, a mechanic-

ally movable rack or a mechanically movable lever.

10. A container, according to claim 4, wherein for each rail section there is provided a pressure medium cylinder preferably an hydraulic cylinder,

5 which is located between the rail section and the container side wall, with its cylinder journalled articulatedly to the bearing section and with its piston rod acting articulatedly on the rail section.

11. A container, according to claim 2, wherein 10 the two rail sections are connected together by a transverse cross-piece at a distance from the swivelling shaft, preferably in the free longitudinal end region.

12. A container, according to any one of the 15 preceding claims, wherein the double guide has two guide-rails attached to the bearing section which have a U-shaped cross-section with the U opening pointing upwards, into which in each case a track rail with a U-shaped cross-section is fitted so that it can 20 be pulled out.

13. A container, according to any one of the preceding claims, wherein lateral fixing in position means in the form of bolted, plug or support 25 sections are provided on the guide-rails for position-secured connection with the container lashing points, these position-fixing means being arranged at the free longitudinal end region of the guide-rails.

14. A container, according to any one of the preceding claims, wherein upright supports are 30 detachably fixed, preferably so that they can be hinged out, on the guide-rails in the free longitudinal end region, so as to permit stacking of several devices on top of one another in an horizontal plane.

15. A transportable container substantially as 35 described herein with reference to the accompanying drawings.